WHAT IS CLAIMED IS:

1. A time stamping system, comprising a client device and a server device;

the client device including:

a digest generation unit for generating a plurality of digests for a plurality of digital documents;

a digest combining unit for combining the plurality of digests generated by the digest generation unit;

a unified digest generation unit for generating a unified digest from the plurality of digests as combined by the digest combining unit;

a transmission unit for transmitting a time stamping request containing the unified digest generated by the unified digest generation unit, to the server device; and

a reception unit for receiving a time stamp token for the plurality of digital documents from the server device; and

wherein the server device generates the time stamp token containing a time stamped digital document obtained by combining the unified digest and a time information acquired in response to the time stamping request, and a digital signature for the time stamped digital document.

2. The time stamping system of claim 1, wherein the client device further includes:

a digital document specifying unit for specifying the plurality of digital documents from digital documents on a personal computer or a network, in units of files or folders.

3. The time stamping system of claim 2, wherein the digital document specifying unit specifies the plurality of digital documents such that a previously obtained time

stamp token is included in the plurality of digital documents.

4. The time stamping system of claim 1, wherein the client device further includes:

a time specifying unit for specifying regular digest generation times to the digest generation unit such that the digest generation unit regularly generates the plurality of digests at the regular digest generation times.

5. The time stamping system of claim 1, wherein the client device further includes:

a verification unit for verifying whether the digital signature contained in the time stamp token received at the reception unit is authentic or not.

6. The time stamping system of claim 1, wherein the client device further includes:

a verification unit for verifying that a time indicated by the time stamped digital document contained in the time stamp token received at the reception unit is between a transmission time of the time stamping request at the transmission unit and a reception time of the time stamp token at the reception unit.

7. The time stamping system of claim 1, wherein the server device includes:

a digital signature generation unit for obtaining the time stamped digital document by combining the unified digest and the time information, and generating the digital signature for the time stamped digital document; and

a time stamp token generation unit for generating the time stamp token from the time stamped digital document and the digital signature generated by the digital signature

generation unit.

8. The time stamping system of claim 1, wherein the server device includes:

a plurality of time acquisition units, each time acquisition unit sequentially acquiring the time information given in a prescribed constant incremental time unit, in response to the time stamping request, independently from other time acquisition units;

a plurality of combining units, provided in correspondence to the plurality of time acquisition units, each combining unit generating a plurality of time stamped digital documents by sequentially combining a data containing the unified digest with the time information sequentially acquired by a corresponding one of the time acquisition units, independently from other combining units;

a plurality of digital signature units, provided in correspondence to the plurality of combining units, each digital signature unit generating a digital signature for each time stamped digital document generated by a corresponding one of the combining units, independently from other digital signature units;

a unified digital signature generation unit for selecting a plurality of digital signatures, one digital signature per each digital signature unit, which are generated by the plurality of digital signature units for one time stamped digital document of an identical time, from a plurality of digital signatures generated by the plurality of digital signature units, and generating a unified digital signature from selected digital signatures; and

a time stamp token generation unit for generating the time stamp token from said one time stamped digital document and the unified digital signature generated by the

unified digital signature generation unit.

9. The time stamping system of claim 8, wherein each digital signature unit is controlled not to generate the digital signature for at least one of those time stamped digital documents of times that have no chance of becoming the identical time.

10. The time stamping system of claim 8, wherein the unified digital signature generation unit and the time stamp token generation unit constitute a time stamping authority, while each set of a time acquisition unit, a combining unit, and a digital signature unit constitute a distributed partial time stamping authority.

11. A client device of a time stamping system, the client device comprising:

a digest generation unit for generating a plurality of digests for a plurality of digital documents;

a digest combining unit for combining the plurality of digests generated by the digest generation unit;

a unified digest generation unit for generating a unified digest from the plurality of digests as combined by the digest combining unit;

a transmission unit for transmitting a time stamping request containing the unified digest generated by the unified digest generation unit, to a server device of the time stamping system; and

a reception unit for receiving a time stamp token for the plurality of digital documents from the server device.

12. The client device of claim 11, further comprises:

a digital document specifying unit for specifying the plurality of digital documents from digital documents on a personal computer or a network, in units of files or

folders.

13. The client device of claim 12, wherein the digital document specifying unit specifies the plurality of digital documents such that a previously obtained time stamp token is included in the plurality of digital documents.

14. The client device of claim 11, further comprising:

a time specifying unit for specifying regular digest generation times to the digest generation unit such that the digest generation unit regularly generates the plurality of digests at the regular digest generation times.

15. The client device of claim 11, wherein the time stamp token contains a time stamped digital document obtained by combining the unified digest and a time information acquired in response to the time stamping request, and a digital signature for the time stamped digital document, and

the client device further comprises a verification unit for verifying whether the digital signature contained in the time stamp token received at the reception unit is authentic or not.

16. The client device of claim 11, wherein the time stamp token contains a time stamped digital document obtained by combining the unified digest and a time information acquired in response to the time stamping request, and a digital signature for the time stamped digital document, and

the client device further comprises a verification unit for verifying that a time indicated by the time stamped digital document contained in the time stamp token received at the reception unit is between a transmission

time of the time stamping request at the transmission unit and a reception time of the time stamp token at the reception unit.

17. A server device of a time stamping system, the server device comprising:

a plurality of time acquisition units, each time acquisition unit sequentially acquiring the time information given in a prescribed constant incremental time unit, in response to a received digital document, independently from other time acquisition units;

a plurality of combining units, provided in correspondence to the plurality of time acquisition units, each combining unit generating a plurality of time stamped digital documents by sequentially combining the received digital document with the time information sequentially acquired by a corresponding one of the time acquisition units, independently from other combining units;

a plurality of digital signature units, provided in correspondence to the plurality of combining units, each digital signature unit generating a digital signature for each time stamped digital document generated by a corresponding one of the combining units, independently from other digital signature units;

a unified digital signature generation unit for selecting a plurality of digital signatures, one digital signature per each digital signature unit, which are generated by the plurality of digital signature units for one time stamped digital document of an identical time, from a plurality of digital signatures generated by the plurality of digital signature units, and generating a unified digital signature from selected digital signatures; and

a time stamp token generation unit for generating the time stamp token from said one time stamped digital

document and the unified digital signature generated by the unified digital signature generation unit.

18. The server device of claim 17, wherein each digital signature unit is controlled not to generate the digital signature for at least one of those time stamped digital documents of times that have no chance of becoming the identical time.

19. The server device of claim 17, wherein the unified digital signature generation unit and the time stamp token generation unit constitute a time stamping authority, while each set of a time acquisition unit, a combining unit, and a digital signature unit constitute a distributed partial time stamping authority.

20. A time stamping method in a time stamping system formed by a client device and a server device, comprising the steps of;

(a) generating a plurality of digests for a plurality of digital documents at the client device;

(b) combining the plurality of digests generated by the step (a), at the client device;

(c) generating a unified digest from the plurality of digests as combined by the step (b), at the client device;

(d) transmitting a time stamping request containing the unified digest generated by the step (c), from the client device to the server device;

(e) generating at the server device a time stamp token containing a time stamped digital document obtained by combining the unified digest and a time information acquired in response to the time stamping request, and a digital signature for the time stamped digital document; and

(f) receiving the time stamp token for the plurality of

digital documents from the server device, at the client device.

21. The method of claim 20, further comprising the step of:

specifying the plurality of digital documents from digital documents on a personal computer or a network, in units of files or folders, at the client device.

22. The method of claim 21, wherein the specifying step specifies the plurality of digital documents such that a previously obtained time stamp token is included in the plurality of digital documents.

23. The method of claim 20, further comprising the step of:

specifying regular digest generation times at the client device such that the step (a) regularly generates the plurality of digests at the regular digest generation times.

24. The method of claim 20, further comprising the step of:

verifying whether the digital signature contained in the time stamp token received by the step (f) is authentic or not, at the client device.

25. The method of claim 20, further comprising the step of:

verifying that a time indicated by the time stamped digital document contained in the time stamp token received by the step (f) is between a transmission time of the time stamping request at the step (d) and a reception time of the time stamp token at the step (f), at the client device.

26. The method of claim 20, wherein the step (e) comprises the sub-steps of:

(e1) sequentially acquiring the time information given in a prescribed constant incremental time unit, in response to the time stamping request, at each one of a plurality of time acquisition units in the server device, independently from other time acquisition units;

(e2) generating a plurality of time stamped digital documents at each one of a plurality of combining units, provided in correspondence to the plurality of time acquisition units in the server device, by sequentially combining a data containing the unified digest with the time information sequentially acquired by a corresponding one of the time acquisition units, independently from other combining units;

(e3) generating a digital signature at each one of a plurality of digital signature units, provided in correspondence to the plurality of combining units in the server device, for each time stamped digital document generated by a corresponding one of the combining units, independently from other digital signature units;

(e4) selecting a plurality of digital signatures, one digital signature per each digital signature unit, which are generated by the plurality of digital signature units for one time stamped digital document of an identical time, from a plurality of digital signatures generated by the plurality of digital signature units, and generating a unified digital signature from selected digital signatures; and

(e5) generating the time stamp token from said one time stamped digital document and the unified digital signature generated by the step (e4).

27. The method of claim 26, wherein at the step (e3), each digital signature unit is controlled not to generate the

digital signature for at least one of those time stamped digital documents of times that have no chance of becoming the identical time.

28. A method of receiving a time stamping service at a client device of a time stamping system, the method comprising the steps of:

(a) generating a plurality of digests for a plurality of digital documents;

(b) combining the plurality of digests generated by the step (b);

(c) generating a unified digest from the plurality of digests as combined by the step (b);

(d) transmitting a time stamping request containing the unified digest generated by the step (c), to a server device of the time stamping system; and

(e) receiving a time stamp token for the plurality of digital documents from the server device.

29. The method of claim 28, further comprising the step of:

specifying the plurality of digital documents from digital documents on a personal computer or a network, in units of files or folders.

30. The method of claim 29, wherein the specifying step specifies the plurality of digital documents such that a previously obtained time stamp token is included in the plurality of digital documents.

31. The method of claim 28, further comprising the step of:

specifying regular digest generation times at the client device such that the step (a) regularly generates the plurality of digests at the regular digest generation

times.

32. The method of claim 28, wherein the time stamp token contains a time stamped digital document obtained by combining the unified digest and a time information acquired in response to the time stamping request, and a digital signature for the time stamped digital document, and

the method further comprises the step of verifying whether the digital signature contained in the time stamp token received by the step (e) is authentic or not, at the client device.

33. The method of claim 28, wherein the time stamp token contains a time stamped digital document obtained by combining the unified digest and a time information acquired in response to the time stamping request, and a digital signature for the time stamped digital document, and

the method further comprises the step of verifying that a time indicated by the time stamped digital document contained in the time stamp token received by the step (e) is between a transmission time of the time stamping request at the step (d) and a reception time of the time stamp token at the step (e), at the client device.

34. A method of providing a time stamping service at a server device of a time stamping system, the method comprising the steps of:

(a) sequentially acquiring a time information given in a prescribed constant incremental time unit, in response to a received digital document, at each one of a plurality of time acquisition units in the server device, independently from other time acquisition units;

(b) generating a plurality of time stamped digital

documents at each one of a plurality of combining units, provided in correspondence to the plurality of time acquisition units in the server device, by sequentially combining the received digital document with the time information sequentially acquired by a corresponding one of the time acquisition units, independently from other combining units;

(c) generating a digital signature at each one of a plurality of digital signature units, provided in correspondence to the plurality of combining units in the server device, for each time stamped digital document generated by a corresponding one of the combining units, independently from other digital signature units;

(d) selecting a plurality of digital signatures, one digital signature per each digital signature unit, which are generated by the plurality of digital signature units for one time stamped digital document of an identical time, from a plurality of digital signatures generated by the plurality of digital signature units, and generating a unified digital signature from selected digital signatures; and

(e) generating the time stamp token from said one time stamped digital document and the unified digital signature generated by the step (d).

35. The method of claim 34, wherein at the step (c), each digital signature unit is controlled not to generate the digital signature for at least one of those time stamped digital documents of times that have no chance of becoming the identical time.

36. A computer usable medium having computer readable program codes embodied therein for causing a computer to function as a client device of a time stamping system, the computer readable program codes including:

a first computer readable program code for causing said computer to generate a plurality of digests for a plurality of digital documents;

a second computer readable program code for causing said computer to combine the plurality of digests generated by the first computer readable program code;

a third computer readable program code for causing said computer to generate a unified digest from the plurality of digests as combined by the second computer readable program code;

a fourth computer readable program code for causing said computer to transmit a time stamping request containing the unified digest generated by the third computer readable program code, to a server device of the time stamping system; and

a fifth computer readable program code for causing said computer to receive a time stamp token for the plurality of digital documents from the server device.

37. A computer usable medium having computer readable program codes embodied therein for causing at least one computer to function as a server device of a time stamping system, the computer readable program codes including:

a first computer readable program code for causing said at least one computer to realize a plurality of time acquisition units, each time acquisition unit sequentially acquiring the time information given in a prescribed constant incremental time unit, in response to a received digital document, independently from other time acquisition units;

a second computer readable program code for causing said at least one computer to realize a plurality of combining units, provided in correspondence to the plurality of time acquisition units, each combining unit generating a plurality of time stamped digital documents by

sequentially combining the received digital document with the time information sequentially acquired by a corresponding one of the time acquisition units, independently from other combining units;

a third computer readable program code for causing said at least one computer to realize a plurality of digital signature units, provided in correspondence to the plurality of combining units, each digital signature unit generating a digital signature for each time stamped digital document generated by a corresponding one of the combining units, independently from other digital signature units;

a fourth computer readable program code for causing said at least one computer to select a plurality of digital signatures, one digital signature per each digital signature unit, which are generated by the plurality of digital signature units for one time stamped digital document of an identical time, from a plurality of digital signatures generated by the plurality of digital signature units, and to generate a unified digital signature from selected digital signatures; and

a fifth computer readable program code for causing said at least one computer to generate the time stamp token from said one time stamped digital document and the unified digital signature generated by the fourth computer readable program code.